

PLATE VIII.

- Fig. 1. *Platyphima euptychioides*, ♂.
 Fig. 2. *Dicallaneura virgo*, ♀.
 Fig. 3. — *albosignata*, ♀.
 Fig. 4. — *amabilis mimica*, ♀.
 Fig. 5. *Lampides nitens*, ♂.
 Fig. 6. — *wandammenensis*, ♂.
 Fig. 7. *Milionia wandammenensa*, ♂.
 Fig. 8. — *witleyensis*, ♂.
 Fig. 9. *Eubordeta mars*, ♂.
 Fig. 10. — *flammens discus*, ♀.

III.—*New Species of Lice.* By BRUCE F. CUMMINGS,
 British Museum (Natural History).

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ANOPLURA.

AMONG the dry material, mounted on cardboard in the collection of the British Museum, two specimens were discovered labelled simply "*Pedetes capensis*." These, on being washed in caustic potash and mounted on a slide in Canada balsam, proved to be two females of an interesting and hitherto undescribed form.

EULINOGNATHUS, gen. nov.

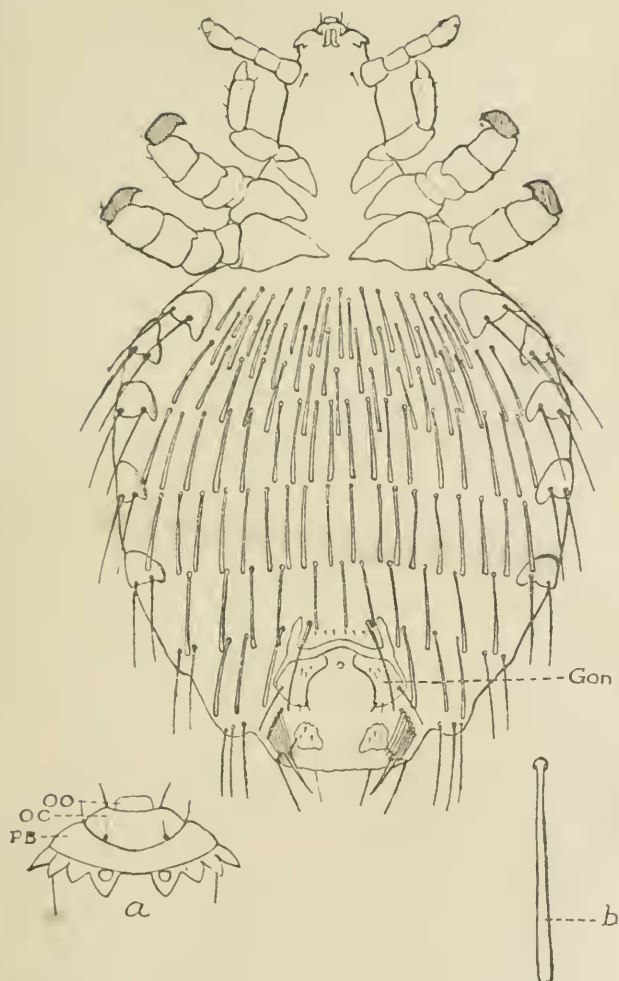
Head longer than broad, antennæ arising just in front of halfway, broader behind the antennæ than in front. No projecting postero-lateral angles. Behind, the head is sunk deep into the thorax. Around the mouth in front a circlet of triangular denticles. Abdomen without tergites or sternites. Five pairs of pleurites, the anterior pair well developed. First pair of legs small. Hairs on the abdomen modified, being long, flattened, parallel-sided, truncate at the tip.

On *Pedetes capensis*, now known as *Pedetes coffer*, Pall. (family Pedetidæ).

Eulinognathus denticulatus, sp. n.

External Form. Female.—Head: the outline is well shown in the figure (text-fig. 1). The characteristic features of the head are the circlet of denticles around the mouth, the absence of postero-lateral angles and also of any "neck" or narrowing of the head just before entering the thorax, so that

Fig. 1.



Eulinognathus denticulatus, sp. n., ♀. Gon = Gonopod.

- a. Preantennal part of the head, greatly enlarged. OO = Oral opening;
 OC = Oral cone; PB = Peristomial band.
 b. Hair (enlarged).

the swollen base of the head is held in a "stiff collar" formed by the thorax, and apparently, therefore, incapable of much lateral motion. The median areas of both dorsal and ventral surfaces are composed of rather thin, smooth chitin, but both behind and in front of the antennæ the head on each side is strengthened by chitinous areas of greater thickness. Behind the antenna this thickened area on the dorsal surface begins as a more or less circular, raised or embossed patch bearing a long bristle and a minute hair. This patch extends down on each side to the ventral surface, where it occupies the margin and runs forward past the antenna to join the peristomial band. This band is a strong circular support, from which arise the triangular denticles (fig. 1 a, *PB*). Each denticle appears to be a triangular plate; its apex points backwards and its base is set transversely to the peristomial band. In the centre of two of the denticles there is a hole as in a set-square. Within the peristomial band lies the small oral cone (fig. 1 a, *OC*), at the apex of which is the short columnar oral opening (fig. 1 a, *OO*). Behind the antennæ dorsally is a shallow, indistinct, transverse groove. Antenna 5-segmented, slightly club-shaped as the fourth segment is broader than the second, third, or fifth, and its postaxial margin is longer and somewhat convex. There is a circular sensorium between segments 4 and 5 on the ventral surface and another on segment 5 on the postaxial line.

Thorax much broader than the head, and broader behind than in front. Claws on the front tarsi, which in both specimens carry two hairs, are either absent or minute. On the other legs the claws are large, in shape like the beak of an accipitrine bird.

Abdomen much broader than the thorax, ovate, large. Neither sternites nor tergites present. On each of the first five segments a pair of pleurites. A fairly broad chitinous band runs transversely over the dorsum of the terminal segment. A chitinous framework supports the flat rounded gonopods. This consists of a cross-bar running from the base of one gonopod to the other, and running back from each extremity of this cross-bar in the direction of the head a short band slightly bending inwards. The gonopod is a flattened lobe, convex at the extremity, a little concave along the inner margin.

Chatotaxy. Female.—Head: on the upper surface is an elongate bristle, reaching nearly down to the abdomen, along with a minute hair close to it situated on the small embossed area behind each antenna. Two minute hairs, widely sepa-

rated, on dorsal surface towards the occiput. A minute hair on the lateral margin of the head a little way behind the antenna. A larger hair on the dorsal surface in front of the embossed area near the base of the antenna. Two minute hairs on the postantennal groove. At the base of the oral cone above, four small hairs widely spaced. A longer one on each side at the base of the columnar oral opening. On the ventral surface, at about the level of the middle of the first segment of the antenna, two fairly small hairs, one on each side of the middle line. Five or six minute hairs with large alveoli on ventral surface of the oral cone.

Thorax: the usual spiracular bristle. A small one on each "shoulder" of the pronotum.

Abdomen: the abdomen is thickly covered both dorsally and ventrally by rows of elongate hairs of peculiar shape (see fig. 1 *b*). Each hair is very long, with a rather small circular "neck" broadening at once into a flat scabbard-like structure, the lateral margins being parallel to each other and the end truncate. Most of these clumsy-looking integumentary appendages are twisted. A few are pointed at the tips.

There is a transverse row of these hairs, very closely placed on the tergum of each segment, excepting the last, where, on the anterior margin of the transverse band, there are two of the long modified hairs, and on the posterior margin two widely separated normal hairs, with a couple of elongate hairs at each lower lateral angle. Ventrally, there is a transverse row of closely-placed, modified hairs on each segment (up to segment 7), although at the base of the abdomen over the first three segments (and the qualification applies to the dorsal surface also) the chaetotaxy in the only two preparations at my disposal remains somewhat uncertain.

On each gonopod, a single long bristle inside the margin postero-laterally. Two or three short hairs on the margin at the inner angle. Inside the inner margin just behind the cross-bar three small hairs on each side. In front of the cross-bar six minute hairs in a row. Running from just behind the gonopod in an oblique row outwards, eight or nine long spines placed closely to each other so that their alveoli are contiguous. At the end of this row, but placed a little further in, a powerful spine on each side of the genital opening. Between these two spines or "thorns" are two small patches of chitin of irregular outline, each with three or four short hairs.

On each pleurite two elongate bristles, situated along the

lower margin. On the soft chitin, just in front of the first pleurite, a group of eight or nine of the modified hairs. Two bristles also on each pleurum behind the seventh segment.

Measurements of Eulinognathus denticulatus
(millimetre-scale).

	Length.	Breadth.
Head29 (at margin)	.23
Thorax3	.51
Abdomen	1.2	1.05
	<hr/>	
Total	1.79	
Length of antenna ..	.25	

MALLOPHAGA.

Family Trichodectidæ.

Described below is a curious new form belonging to this family, which is of especial interest on account of the phylogenetic position of its host, an Edentate.

The material from which the new form is described, consisting of a ♂, three ♀♀, and a larva, was very kindly presented to the British Museum by Mr. A. J. Engel Terzi, and, in spite of their poor condition of preservation (the specimens had been attacked by a species of mite), the main features in the morphology of the skeleton have been made out, although much of the chætotaxy still remains uncertain or obscure.

They were collected on the two-toed sloth (*Cholæpus didactylus*, Linn.) in British Guiana. So far as I know, the only other species of Mallophaga recorded from an Edentate is *Gyropus hispidus*, Nitzsch, from *Bradypus tridactylus*. Among the Anoplura, the remarkable *Hybophthirus notophallus* (Neumann), Enderlein, a parasite of the Cape anteater (*Orycteropus afer*, Pall.), is the only species with an Edentate host.

Trichodectes gastroides *, sp. n.

The new species is readily distinguished by its large dimensions (see p. 100), the form of the head (see figs. 2 & 3, p. 96), and by the character of the abdomen, which, being in both male and female without tergites or sternites, is loose and

* "The Potbellied Louse" is suggested as a popular name.

sac-like, without any external signs of segmentation except in the ♂. In this sex there is a pair of rather large pleurites on the two basal segments; on each of the others, up to the seventh, a pair of small, narrow, chitinous slips situated transversely in the pleural region on each side. In the ♀ these slips are absent, but there are two pairs of large pleurites at the base and one pair at the end, on the penultimate segment of the abdomen.

External Form. Male.—Head: fig. 2 is an accurate representation of the outline of the head, and makes unnecessary the usual circumlocutionary phrases. The notable features are the rather deep semicircular frontal sinus (which has a deep marginal band of dark brown chitin divided into two parts by a median longitudinal line), the large size of the basal segment of the antenna, and a gular plate (see fig. 3, GP) broader than long, lying between the two longitudinal bands that run forward on the ventral surface of the skull*.

There are two small circular sensoria close together on the ventral surface of the third segment of the antenna.

Thorax: the parts were too crushed to allow of description. Apparently it resembles that of the ♀ closely.

Abdomen: the first two pairs of pleurites are large plates with a firm outer but an irregular inner margin, the second pair a little smaller than the first, both of a deep brown colour. On the succeeding segments the pleurites are small, thin, transverse slips. At the posterior end of the last segment are two lobes forming the hind margin of the segment and apparently the posterior lip of the genital opening. These two lobe-like pieces are rounded and white, covered with short bristles; they run in towards one another, but do not meet. Two brown bands of chitin run forward on the ventral surface as far as halfway to the base of the abdomen, one on each side of the copulatory apparatus, which is seen through the transparent integument.

The above description is necessarily incomplete, and may have to be emended in some respects when new and better-preserved material is forthcoming.

External Form. Female (fig. 3).—The usual sexual differences in the antennæ (see figure).

Thorax: pronotum is quite short; lateral margins slightly divergent the one from the other. Meso + metanotum equally

* A gular plate of this character is present in many Mallophaga, e. g., *Nirmus varius*, Nitzsch, *Nirmus vulgatus*, Kell., *Lipeurus quadripustulatus*, Piag. The peculiar structures in this part of the head in *Ancistriona* and *Pseudomenopon tridens* are, perhaps, modified gular plates.

Fig. 2.



Fig. 3.



Fig. 2.—*Trichodectes gastrodes*, sp. n. Head, ♂, dorsal view.
 Fig. 3.—Ditto, ♀. GP=Gular plate; M. St=Mesosternum;
 Gon=Gonopod.

short, a little broader, with lateral margins convex. Posterior margin straight. A considerable area adjoining the posterior margin medially is pale or white, the chitin being thin, and the thicker, deep brown chitin ceasing in an irregular edge.

A strongly developed mesosternum is present, and shown in the figure. Within the prothorax on each side a thin rod runs from the dorsal side to the ventral, taking its origin from the posterior margin of pronotum, and then running downwards and outwards to be inserted into the anterior lateral angle *ventrally*. On the ventral surface of the meso + metathorax on each side are the usual two acetabular bars—strong, rather short, running inwards and downwards on the under surface of the meso + metanotal wing, and helping to suspend the coxæ, into which they are inserted.

Abdomen: as in the ♂, there are at the base two large pleurites on each side. In the ♀ these are succeeded on the next segment by a minute atrophied pleurite on each side, the chitin of which appears to be partially disintegrated. On the other segments, except the penultimate, the pleurites are completely absent. The penultimate pair are large plates, with irregular inside margin, lying in the dorsal surface. The basal plates lie laterally. Tergites and sternites are absent except for a tergite on the last segment, almost divided in two by a median longitudinal line of weak chitization. On the sternum of the same segment, partly covered by the large gonopods, is a brown mark of peculiar shape (see fig. 3).

The gonopods are strongly chitinized flaps of considerable size, articulated ventro-laterally so as to cover much of the lower surface of the last segment. In dorsal view, the free edge of the gonopod is seen on each side, at its base articulating by a rather wide and circular hinge with the pleurite of the penultimate segment.

In both ♂ and ♀ the abdomen is large, loose, and "baggy."

Chytotaxy. Male.—Head: around and just behind the rim of the frontal sinus on the dorsal surface four widely-spaced hairs. A little way in the rear of the first and fourth, another hair. In front of the antenna, a small hair. Around the temple margin, four or five small hairs. Inside the margin, one behind the other, five hairs of somewhat larger size, the first separated by a wide space from the ones behind. Three or four hairs on the promontory on each side of the sinus. Other hairs on dorsal surface arranged as shown in the figure. Ventral surface apparently bare. On upper surface of first segment of the antenna, a row of six large

hairs well spaced one beside the other and extending from the proximal to the distal extremity. Preaxially a single hair. On segment 2, three hairs on the upper surface and one long one on postaxial margin. On segment 3, at the postaxial angle of the distal end, four or five stout hook-shaped denticles; on the preaxial side a patch of short spines. Preaxially three hairs, postaxially two, on dorsal surface two.

Thorax and abdomen: chaetotaxy too uncertain to justify description.

Chaetotaxy. Female.—Antennæ more heavily set with hairs.

Thorax: a short hair on each lateral margin of the prothorax and two on each lateral margin of the meso-metathorax.

Abdomen: on the dorsal surface, probably a row of small hairs across each segment.

A moderately long bristle on each pleurite of penultimate segment. Several fairly long hairs along lower margin of tergite, two of these close together at the postero-lateral corner of the tergite. On the terminal sternum two patches of minute hairs, closely set one on each side of the middle line. Along the lower margin of the gonopod, seven or eight longish hairs.

Mouth-parts.—The left mandible is a powerful, gnarled-looking weapon, complex in form and moulding*. For the purpose of description it may be divided into halves—a proximal and distal—by a transverse band of dark brown chitin on the ventral surface. The proximal half is a kind of pedestal on which the rest of the mandible is set. The distal half, narrower than the base, ends in three distinct apices irregularly placed. There are the usual two articular surfaces, one a rounded condyle beneath the basal process, and the other a rather large concavity into which fits a big tendon. The basal process is rather long and bent, as usual, so as to point horizontally. Distally the opposable surface of the mandible possesses the usual transverse ridges, disposed in two series separated from one another by a smooth, concave area.

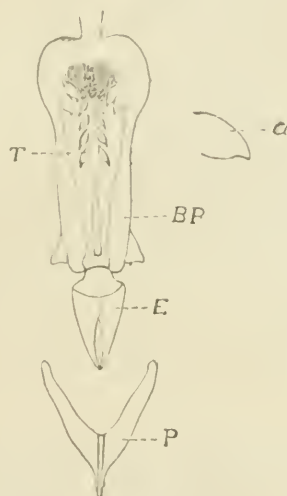
The right mandible possesses a wide straight base-line, and from the outside two-thirds of this the main body of the mandible arises, leaning outwards at first and then bending inwards sharply, making an angle on the outer margin,

* The mouth-parts, especially the mandibles and the œsophageal sclerite (or lyriform organ), afford useful systematic characters in the Mallophaga.

where the tendon of the large extensor muscle is inserted. The inner third of the base of the mandible is a short rectangular projection. There is a single sharp apex and a series of oblique ridges on the opposable surface. A small plate with a round even margin overlaps the outer edge just behind the apex, giving the appearance of a casque or hood over the outer margin.

Labium.—The anterior margin is straight, without lobes or prominences. At each lateral angle, set in a dark brown socket of thick chitin, is the so-called paraglossa—a stout

Fig. 1.



Trichodectes gastroles, sp. n. Copulatory apparatus, ♂, × 45.

BP=Basal plate; E=Endomere; P=Paramere; T=Denticle on sac.
a. Denticle enlarged.

single-segmented lobe, tapering slightly at the distal end. The tip of this appendage is obliquely truncate, the outer margin being longer than the inner. On the apex pointing inwards are four or five minute spines set on relatively large round pedestals. On the ventral surface of the labium between the paraglossae are eight spines arranged in a circle. Immediately behind this circle is a transverse brown band, which splits into two branches at each end, one running up to the front margin and the other running backwards and disappearing in the clear chitin behind the mouth. This is probably a supporting sclerite for the labium.

Isopogometric Apparatus.—Anterior cornua of the sclerite as long as the main body. The distal end of each cornu rounded, narrower than at the base. The main body is lemon-shaped, the posterior narrow end drawn out into a short truncate “tab.” The upper surface is concave; on each side a narrow chitinous band runs up on each side of the pharynx. This band partly arises from the basal part of the anterior cornu. The “glands” or basal pieces are rounded oval, each with a thick stout tendon inserted into it behind, some way in front of the posterior margin. Around the bifurcating chitinous chords is a thin plate (? hypopharynx. A similar piece is present and has been described in *Lipeurus ferox*, P. Z. S. 1913, p. 129).

Male Copulatory Apparatus (fig. 4, p. 99).—The *basal plate* is of rather complex sculpture, sufficiently shown in the figure. In the median area it is thin and transparent, the lateral margins, however, being thickly chitinized. *Parameres* fused at the tips. Each paramere is a short band, narrow at the base, broader at the end, where it fuses with its fellow along the whole line of its breadth and projects in front as a small, somewhat depressed beak. *Endomeres* are fused together at the base and shaped like a pair of tweezers. The “*preputial sac*” is remarkable for the possession of a number of large denticles, of which there are two longitudinal rows, four in each, with a large number of smaller teeth in a group behind. This description, it must be pointed out, is made of the apparatus *retracted*.

By reference to the sketch of the genitalia of *T. mephitidis* in the paper by V. L. Kellogg and G. F. Ferris (“Anoplura and Mallophaga of N. American Mammals,” Stanford University Publications, 1915, pl. viii. fig. 4), it may be surmised that the genitalia of that species closely resemble *T. gastrodes*. On this and other smaller characters *T. mephitidis*, Osb., and *T. interrupto-fasciatus* should, perhaps, be regarded as the nearest allies of *T. gastrodes*.

Measurements (millimetre-scale).

	♂.		♀.	
	Length.	Greatest width.	Length.	Greatest width.
Head.....	.71	.85	.73	.87
Thorax.....	.32	.71	.35	.72
Abdomen.....	1.73	.90	1.72	1.10
Total.....	2.76		2.80	

	♂.			♀.			
	Length.	Width.		Length.	Width.		
Antennæ:							
Segment 1 ..	·30	·16		·11	·09		
2 ..	·19	·08		·13	·06		
3 ..	·18	·08		·19	·07		
Total	·67			·43			
		♂.			♀.		
Length of legs:	1st.	2nd.	3rd.	1st.	2nd.	3rd.	
Femur	·21	·30	·33	·20	·30	·30	
Tibia+tarsus..	·31 (+claw)	·38	·38	·3 (+claw)	·40	·38	
Claw	·12	·15	..	·13	·12	
Total	·52	·80	·86	·50	·83	·80	

Family Docophoridae.

PARAGONIOCOTES, gen. nov.

This is a new parrot genus known to me by several species, only one of which has hitherto been described, viz., the species from *Calopsittacus nova-hollandiae* named in 1880 by the indefatigable Piaget *Goniocotes fasciatus* ('Les Pédi culines,' 1880, p. 236, pl. xix. fig. 11). *G. fasciatus* is a simple member of the genus in which the two large recurved frontal processes one on each side of the head, so characteristic a feature of the new species about to be described, are absent.

The genus may be shortly diagnosed as follows:—

Head broader than long. Front margin circular, temples rounded, with an elongate bristle. Prothorax narrow, abdomen short and small. Small species infesting parrots.

The mouth-parts and male copulatory apparatus may also provide some generic characters. Although the general facies recalls the Gonioididae, the genitalia in the male are distinctly Nirmoid in character, so that in all probability it is more correct to include this genus in the family Docophoridae, raised by Mjöberg in 1910 to include the genera *Docophorus*, *Nirmus*, and *Pseudonirmus*.

Paragoniocotes gripocephalus, sp. n.

This species is described from spirit-material, probably of some considerable age, in the collection of the British Museum, and taken, according to the label inside the tube, on *Chrysotis augusta* [now known as *Amazona augusta*, G. R. Gray], the only other information available concerning them being the locality indicated in the two words "August Amazon" (*sic*).

So far as I am aware, the only other member of the Mallophaga known from a *Chrysotis* is *Nirmus ligulatus*, Neumann, from *C. brasiliensis* (Bull. Soc. Hist. Nat. Toulouse, 1890, xxiv. p. 60, "Contribution à l'étude des oiseaux de la famille des Psittacidae").

External Form. Male (fig. 5).—Head: pale in colour; in front of the antenna on each side is a large process, slightly curved, running downwards and backwards beneath the base of each antenna. Each process has a brown-coloured tip. The firm circular margin of the temples, the occipital line, and the two incrassations—one in front of each antenna—are notable characteristics. On each of the third and fifth segments of the antenna there is a minute hair, probably of a sensory nature, set in a large alveolus.

Prothorax much narrower than the head, short, parallel-sided. Clavicles* apparently absent. Meso + metathorax broadens out upon the abdomen, the sides being divergent.

Abdomen small, rather short; broadest at the sixth segment. Pale or whitish.

External Form. Female.—Head and thorax as in the ♂. Abdomen more regularly ovate, especially noticeable at the end of the abdomen, where the terminal segments maintain a firm unbroken curve, unbroken as in the ♂ by the somewhat sudden narrowing of the last segment. On each segment in the pleural region are two tergites, one on each side, leaving an uncovered median area. Tergites pale brown in colour. Gonopods small, represented by two delicate lobes. A rather long, almost parallel-sided genital plate, semitransparent or whitish. Posterior margin straight, transverse, and fringed with hairs. On each side of the plate, at about the level of the sixth segment, a small brown chitinous patch.

Chaetotaxy. Male.—Head: along the frontal margin between the two incrassations four well-spaced hairs, the two middle ones short. Behind these, and between them and the mandibles on the dorsal surface two longer hairs. At about the level of the postaxial margin of the antenna on the dorsal surface, a short bristle, one on each side near the margin. Around the temple margin four hairs, well-spaced, the first three short, the fourth very long. Along the occipital line several short hairs. On the ventral surface, four well-spaced fairly long hairs on preantennal area behind the anterior margin.

Thorax: on the posterior lateral angle of the pronotum, a

* "Clavicle" is a term I borrowed in 1913 from vertebrate anatomy to signify the two endoskeletal rods in many Mallophaga which run from the "shoulder" of the pronotum down to the prosternum.

stout bristle. Along the hind margin of meso + metanotum a row of very elongate bristles, five or six on each side, leaving the line in the median part bare. On the sterna there are two bristles between each pair of coxæ.

Abdomen: provided with many very elongate bristles. On the dorsal surface, at the base of the abdomen there are four

Fig. 5.

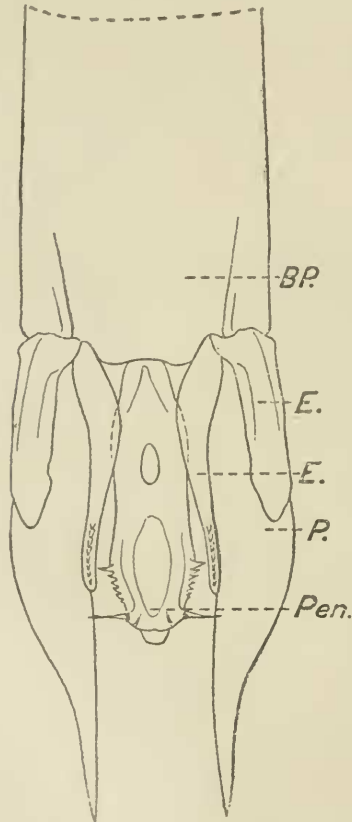


Paragoniocola grippoccephalus, sp. n., ♂.

well-spaced long hairs, the two outside ones situated further forward than the middle ones. Behind these are six hairs, a group of three in a row on each side of the middle line. An elongate bristle near the lateral margin on each side. On the next segment there is a closely-set row of four hairs on each side of the bare median area, with a very elongate pleural bristle. Similarly on the next three segments, in which the

short rows are set one on each side of the basal plate. Behind these are a couple of widely-spaced hairs on each side, and behind these again the usual two short transverse rows, three hairs on one side and four on the other. On the last tergum,

Fig. 6.



Paragoniocotes gripecephalus, sp. n. Copulatory apparatus, ♂
(ventral view), $\times 268$.

BP. = Basal plate; *E.* and *E.* = Endomerai parts (?); *P.* = Paramere;
Pen. = Penis, complex.

near the posterior margin, a semicircular row of six very small hairs. Along margin of upper lip of the genital opening six long bristles, one beside the other on each side. Several long bristles along margin of lower lip.

On the ventral surface of the last segment are scattered a large number of very elongate bristles. Chætotaxy elsewhere difficult to analyse with certainty: apparently five transverse rows of well-spaced thin hairs.

Chætotaxy. Female.—Abdomen: there are at least two long hairs on the median dorsal area of each segment except the last. On each of the lateral tergites 2 to 6 there is along the posterior margin a single elongate bristle (present also in the ♂). A pair of elongate straight bristles on the terminal margin of the abdomen.

Ventrally, at the base of the abdomen four widely-spaced hairs, the two middle ones very long. A row of seven or eight well-spaced hairs on the next five segments. Posterior segments covered by genital plate, which is bare except for the hind marginal fringe and a few minute pale hairs along the longitudinal furrows lying one on each side of the plate. Five stout bristles on each gonopod. Between the gonopod and the lateral margin three elongate bristles, two in front and one behind.

Male Copulatory Apparatus (fig. 6).—The male copulatory apparatus presents several interesting features. In the description which follows the attempt which has been made to homologize the parts must be regarded as merely tentative. The apparatus in this species is specialized, and rather difficult to interpret without intermediate species — forthcoming, perhaps, in other parrot parasites of the genus.

Basal plate delicate, thin, transparent, quadrilateral.

The rest of the genitalia are strongly chitinized and deep brown in colour:—

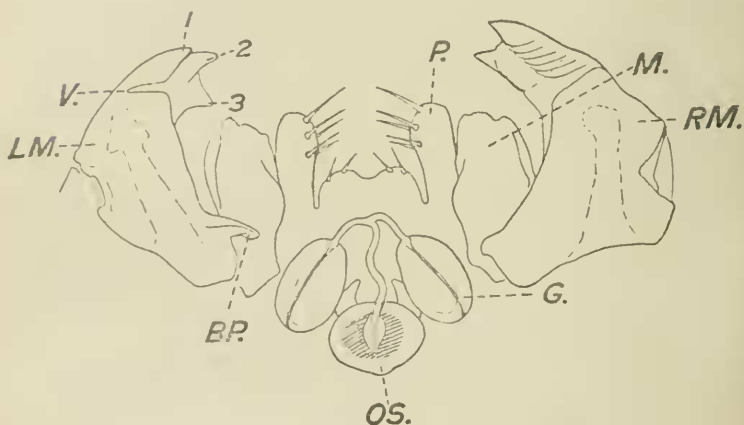
Parameres.—I regard as parameres the two broad blades which articulate with the middle part of the posterior margin of the basal plate, and overlie, so as almost to completely hide from view, the rest of the genitalia. Usually the parameres are attached laterally. Each paramere is elegantly curved on the outer margin and narrows to a slender tip, where a directive hair is situate.

Mesosome.—On each side of the parameres and articulated to the posterior lateral angles of the basal plate is a smaller piece shaped somewhat like a rabbit's ear. In rather close connexion with this piece, but attached to the basal plate ventrally so as to be quite hidden by the parameres, is still another appendage, narrow, rod-like, half as long as the paramere, and with a toothed lower edge. These two shorter appendages on each side—one dorsal and one ventral—may represent the endomerall parts of the mesodome. The Rev. J. Waterston has pointed out to me that

the endomerall portion of the copulatory sac is sometimes chitinized unevenly on each side into a more or less separate dorsal and ventral band. In the present case, if we suppose the intervening thin chitin of the sac to have disappeared, we are left with the two separate endodermal appendages on each side.

Penis.—Within the two inner rods lies a compound structure, an oblong hone-shaped box, consisting of fused penis, hypomeres, and endomeres, with two longitudinal rows of curved hooks on the lower surface, occupying the distal half of each lateral margin. The hooks are unequal in size. Near the

Fig. 7.



Paragoniocytes gripocephalus, sp. n. Mouth-parts, \times about 260.

LM.=Left mandible; RM.=Right mandible; BP.=Basal process; M.=First maxilla; P.=Paraglossa; OS.=the so-called oesophageal sclerite; G.=“Gland.”

tip, springing out from each lateral margin, is a directive hair, much longer than the longest hook, very straight, and of a whitish colour.

Mouth-parts (fig. 7).—Mandibles of a pale whitish colour proximally. A fairly strong ginglymus joint in front and a rather large rounded condyle behind. To each point of articulation a strong bar of chitin runs from the apical end.

On the *left* mandible there are three apices—two at the tip side by side and a large, broad, flat one projecting below these like a webbed toe. There is, in addition, the usual large basal process. On the lower or inner surface of the mandible, at the base of the first apical angle, is a small

V-shaped (V, fig. 7) groove running in transversely from the cutting-edge. The *right* mandible has two apices. At the base the lower of these two apical teeth is transversely ribbed, this ribbed surface working against a surface similarly ribbed on the lower side (and therefore not visible in the figure) of the first apical tooth of the opposite mandible.

First Maxillæ.—Soft lobes, longer than broad, with a small piece of thicker chitin on the outer margin as a support.

Labium.—The so-called paraglossæ, columnar, straight, are rather long with soft, rounded, distal ends. On the inner surface at the tip, four or five spines nearly as long as the lobe itself and all pointing inwards. Between these two appendages, the anterior margin of the labium runs out into two small round prominences, each possessing a few small spines.

Isopogometric Apparatus.—Œsophageal sclerite very rounded, a little broader than long. No posterior cornua. Anterior cornua thinly chitinized, short, rather broad, and invisible without dissection.

Measurements (millimetre-scale).

	♂.		♀.	
	Length.	Breadth.	Length.	Breadth.
Head	·35	·50	·4	·62
Pro { thorax	·20 {	·28 {	·3 {	·32 {
Meso {		·50 {		·50 {
Abdomen	·67	·55	·88	·80
Total	1·2		1·58	
Length of antenna:	♂.			
Segment 1	·082			
2	·065			
3	·041			
4	·027			
5	·032			

Linognathoides citelli, sp. n.

In the 'Bulletin for Entomological Research' (vol. v. pt. 2, Sept. 1914, p. 160) I described a new species of Anoplura from a Sciurid, *Citellus leptodactylus*, under the name *Linognathoides spermophilii*. Mr. Launcelot Harrison, B.Sc., has kindly pointed out that this name has already been used by Grube under a figure of *Linognathus larviscalus* (Grube) in Middendorff's 'Sibirischer Reise gesamm. Parasiten Zool.,' vol. ii. p. 498, t. ii. fig. 3 (1851). I therefore rename *Linognathoides spermophilii* as *Linognathoides citelli*.